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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
IO/580,336	05/24/2006	Shun Takahashi	ITO-105-PCT	5569
77464	7590	09/07/2010	EXAMINER	
IPUSA, P.L.L.C 1054 31ST STREET, N.W. Suite 400 Washington, DC 20007			NERANGIS, VICKEY MARIE	
			ART UNIT	PAPER NUMBER
			1796	
			NOTIFICATION DATE	DELIVERY MODE
			09/07/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/580,336	Applicant(s) TAKAHASHI ET AL.	
	Examiner Vickey Nerangis	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-25 and 27-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-25 and 27-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/2/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The after-final amendment filed on 8/20/2010 has been entered. The finality of the last Office action is removed, and a non-final Office action is set forth as follows.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.
3. All outstanding rejections, except for those maintained below, have been withdrawn in light of applicant's response filed on 8/20/2010
4. New grounds of rejection are set forth below. Thus, *a 2nd non-final Office action is set forth as follows.*

Claim Rejections - 35 USC § 103

5. Claims 22-25 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mohanty (US 2003/0216496) in view of Suzuki (US 5,683,208) and Swor (US 5,494,955)

Mohanty discloses a polylactic acid-based nanocomposite (paragraph 0059) that is prepared by extrusion and compression molding (see figures 1-4) comprising PLA (paragraph 0023) and clay which is organic modified into an organoclay and dispersed into the polymer (paragraph 0061). Mohanty also teaches the use of a coupling agent to improve the clay-polymer matrix adhesion (paragraph 0061).

Mohanty fails to disclose (i) an organoclay (i.e., organically modified layered silicate) that is functionalized with a silyl group and (ii) that the clay comprises silanol groups on the surface.

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Suzuki discloses a polyester resin composition having improved flexural modulus of elasticity, flexural strength, deflection temperature under load, and dimensional stability comprising a thermoplastic polyester resin and a silane-treated phyllosilicate which is treated with Y_nSiX_{4-n} , wherein $n = 0-3$, Y is a hydrocarbon group having 1-15 carbon atoms such as alkyl (col. 7, line 73) and can be substituted with an amide group (col. 7, line 26), and X is a hydrolysable group such as amino and/or a hydroxyl group (col. 7, line 12-47).

Given that Mohanty discloses the use of a coupling agent and further given that Suzuki teaches that treating phyllosilicate with a silane like claimed provides for improved combination of properties, it would have been obvious to one of ordinary skill in the art to utilize the silane treatments of Suzuki in the nanocomposite of Mohanty.

With respect to (ii), Swor discloses that a coupling agent reacts with the silanol groups on the surface of silicates and clays (col. 3, lines 36-46).

Given that Mohanty discloses that the clays are modified with a silane coupling agent like Swor, it would have been obvious to one of ordinary skill in the art to utilize a clay with a silanol groups so that it can interact with the coupling agent.

Double Patenting

6. Claims 22-25 and 27-30 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 11/628,625 (published as US 2008/0069993). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons given below.

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US appl. '625 claims a biodegradable gas barrier container comprising polylactic acid and a phyllosilicate to which a substituted silyl group having a substituted or unsubstituted alkyl group is bonded. On pages 9-10 of the specification of US appl. '625, the substituted silyl group is described as, *inter alia*, be substituted with hydroxyl and amino groups and unsubstituted or substituted alkyl groups having 3-20 carbon atoms. Case law holds that those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. *In re Vogel*, 422 F.2d 438, 164 USPQ 619,622 (CCPA 1970). Therefore, it would have been obvious to one of ordinary skill in the art to prepare a resin composition like claimed with a silicate comprising a substituted silyl group like claimed.

Response to Arguments

7. Applicant's arguments filed 8/20/2010 have been fully considered but are moot in view of the new grounds of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vickey Nerangis whose telephone number is (571) 272-2701. The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

vn

/Vickey Nerangis/
Primary Examiner, Art Unit 1796